TITLE: A MAPPING REVIEW OF MODELS OF PRACTICE EDUCATION IN ALLIED HEALTH AND SOCIAL CARE PROFESSIONS

SHORT TITLE: A REVIEW OF PRACTICE EDUCATION MODELS

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ABSTRACT

Practice education is fundamental to pre-registration learning for many health and social care professions, yet finding sufficient opportunities for students is challenging. One-to-one student-educator pairings are common, and while different models could increase placement opportunities, associated terminology is inconsistent and an overview of advantages, challenges and available evidence is missing. This mapping review identifies, categorises, and critically considers the evidence for different models of practice education used by health and social care professions.

Papers from 2008 onwards reporting on practice education approaches in allied health or social care profession courses were identified in three databases. Data was extracted, methodological quality categorised and a typology of practice education models developed.

53 papers were reviewed and developed into a typology of fourteen models. Mapping indicated issues with a lack of high quality research and limitations in available outcome indicators. Pre-

requisites for the effective operation of different models include preparation, communication, and allowing sufficient time for new ways of working.

Practice education discourse is characterised by varied terminology and practices. Various models for structuring practice education exist though the evidence for their effectiveness and impact on capacity is limited. Using consistent language and considering wider impacts and outcomes is recommended in future study.

Keywords: Students, Health Occupations; Education, Professional; Preceptorship; Review.

INTRODUCTION

Practice education is fundamental to pre-registration curricula of many health and social care professions (Chambers et al. 2016). However, challenges in securing sufficient practice education opportunities to meet the growing demand for pre-registration education have been identified and persisted over the last 15 years, appearing to be common to different countries including, for example, the UK (Craik and Turner, 2005; Haig and Summerfield-Mann, 2017), USA (Roberts and Simon, 2012), and Australia (McBride et al., 2015). Rogers' et al. (2007) early work to examine this issue identified that allied health professions in several countries experienced challenges associated with providing sufficient placements for students. This has recently been reconfirmed as an issue affecting many of the health and social care professions in the UK, with funding availability and increased student numbers identified as increasing demand for placement opportunities (Chambers et al. 2016).

Papers identifying issues about placement capacity typically include calls to increase opportunities by encouraging professionals to offer placements. Rarely is the model of practice education considered as potentially increasing capacity. Many of the bodies that set standards for pre-registration health and social care professional education specify minimum total duration for practice education, but do not specify how this ought to be achieved. For instance, the World Federation of Occupational Therapists (WFOT, 2016) stipulates that students complete a minimum of 1000 hours of practice education prior to accreditation but do not specify how practice education should be delivered, only that an occupational therapist must be the supervisor and assessor. Similarly, regulatory bodies such as the UK's Health and Care Professions Council (HCPC), state only that the structure, environment and support provided for practice education must be sufficient to ensure learning outcomes are met (HCPC, 2017). Whereas, in the USA the Accreditation Council for Occupational Therapy Education's most recent set of standards provide parameters for acceptable fieldwork experiences corresponding to different levels of education (ACOTE 2018).

The approach used in this mapping review (Grant and Booth, 2009) is intended to develop a current overview of trends and gaps, by identifying and categorising different models of practice education that may be applicable to the provision of practice education for pre-registration occupational therapy students, and identifying reported benefits and contextual consideration associated with their use. While precise definitions for mapping reviews vary, they typically aim

to search a broad field systematically to identify gaps in knowledge and future research needs (Cooper 2016). Detailed critical appraisal is not normally an objective as mapping reviews are used to characterise the key features of bodies of research that are characterised by high levels of heterogeneity, though this may include summarising quality indicators using frameworks for formal quality assessment (Grant and Booth 2009). Similarly, in-depth synthesis of results is replaced by presentation of linkages; identifying and presenting principal characteristics that enable a representation of activity related to a given topic to be presented (Cooper 2016).

METHOD

Papers published since January 1st 2008 were sought for review if they reported identifiable models of practice education used during study to become a recognised health or social care professional. This date range was chosen to include papers published since the review by Overton et al. (2009) of non-traditional occupational therapy practice education, to provide an updated and expanded account of potential practice education models. Papers had to be in English, but were not excluded based on methodology and thus qualitative, quantitative and descriptive studies, and peer-reviewed literature reviews were all eligible for inclusion. Opinion pieces and papers providing insufficient detail were excluded. This was intended to have the benefits of integrative reviewing suggested by Whittemore and Knafl (2005), particularly the idea that incorporating diverse methodologies can capture subjective elements, contextual details, and information about novel approaches. Three databases were selected to ensure papers written from different perspectives were accessed including the allied health professions, education and social sciences. Specific searches were developed and run for each database using combinations of indexed terms and subject headings (see Table 1 for details). An additional search was run in CINAHL with a selection of more specific student related terms to ensure that relevant papers from different disciplines were included. All returned references were imported into RefWorks and screened for duplicates.

Table 1. Search record.

The first author screened article titles and abstracts to assess eligibility. The full text of the article was retrieved if the study met the inclusion criteria or if eligibility was unclear from the abstract. Papers were sent to the second author for screening and discussion if eligibility remained unclear. A standard form for extracting data was developed including: reference

information; details of the professional group studied; geographical location; study design; sample information; description of the practice education model used; summarised results or findings; notes on any methodological limitations or issues; and reference information for potential additional papers. To provide an accessible overview of types of research activity and the quality for the papers reviewed, each ascribed an indicatory of design category and given a quality score based on review of the methods used. The National Service Framework: Long Term Conditions research typology was used (Turner-Stokes et al. 2006), allowing for the inclusion of multiple design types to be recorded, while also differentiating their key attributes.

RESULTS

1316 records were returned. Four additional papers were identified for inclusion during review of included papers. Three further papers published after the searches took place, which studied the use of simulation for practice education, were included on the advice of members of the project's steering group, due to their relevance to the topic. 247 duplicate records were removed followed by 1010 that did not meet eligibility criteria. Thirteen of the remaining 66 papers were excluded on full-text review. In total 53 papers were reviewed (see Figure 1 for details). Methodologically, just over half of the included papers (27/53) reported using a qualitative approach. Descriptive studies accounted for nine papers, with six quantitative studies, five literature reviews and six mixed methods papers also included.

Figure 1. PRISMA Flow diagram of article selection (Moher et al., 2009).

Fourteen different models of practice education were identified, along with five papers reporting on combinations of these into hybrid approaches. A range of professions were represented in studies, including in order of frequency of occurrence occupational therapy (30), nursing (7), physiotherapy (7), social work (5), dietetics (4) speech and language therapy (3), pharmacy (1), podiatry (1) and oral health (1). One paper with an inter-professional focus did not report sufficient detail of participants to allow individual profession to be identified. Details of reviewed papers are given in Table 2. The bubble chart detailed in Figure 2 provides a visual map to the reviewed research, representing research type, quality, volume and focus to help identify gaps.

Table 2. Summary of reviewed papers.

Figure 2. Evidence map for models of practice education.

FINDINGS

One-to-one model

This easily recognised practice education model, in which one practice educator supervises and assesses one student, was the focus of one paper, by Luhanga et al. (2010), who reviewed 57 papers considering the preceptorship approach to nursing practice education. This reported that having a consistent and accessible educator created safe learning spaces, in which individualised feedback and facilitation, and tailored learning opportunities were more available. Several potential issues with the one-to-one model were noted, including the risk for limited learning if student-educator relationships are suboptimal, or if a student becomes dependent on a single role model. Luhanga et al. (2010) also noted issues with the increased workload that supervision using this model might bring, highlighting the need to put clinical priorities ahead of educating students and restricting the quality education and supervision. The importance of support and training for practice educators was identified, with several reviewed papers noting this was often inadequate and therefore a significant cause of poor recruitment and retention of nurses into the practice educator role (Luhanga et al., 2010).

Peer-assisted learning

Peer-assisted learning models involve two or more students concurrently working with one educator, with an expectation that the students work together in ways that facilitate learning. This model was frequently referenced across professions, featuring in 13 primary research studies (8 qualitative, 2 quantitative and 3 mixed methods designs) and 2 non-analytic reviews. Most of these identified benefits. Flood et al. (2010) noted that peer-assisted learning is an established approach associated with increased professional competence and confidence that results from a greater degree of active learning. Other papers corroborate these claims, with Secomb's (2008) non-meta analytic systematic review reporting increased educational outcomes, and Briffa and Porter's (2013) review noting consistent reports of improved student outcomes and satisfaction, albeit from methodologically limited studies. Kinsella and Piersol (2018) reported increased perceptions of self-confidence and clinical proficiency from both students and educators while O'Connor et al. (2012) suggested peer-learning models increased

experiential learning. Robert et al. (2009) reported that the model increased the number of placement hours provided by practice educators without negatively impacting student experience or service delivery.

Bhagwat et al. (2018), Reidlinger et al. (2017), and O'Connor et al. (2012) compared applications of the peer-assisted learning with the one-to-one model, identifying no conclusive advantages for either approach. Student experience and satisfaction with workload on peer-assisted placements were reported as equivalent to, or slightly higher, than one-to-one placements (Reidlinger et al., 2017), though final-year students favoured the latter as they felt it allowed clearer demonstrations of competency (O'Connor et al., 2012). Practice educators reported that the model might afford fewer learning opportunities (Briffa and Porter, 2013; Price and Whiteside, 2016), and required significantly more direct student supervision (Reidlinger et al., 2017), though a time-use survey by Bhagwat et al. (2018) suggested that this may not to be the case. Sevenhuysen et al. (2014; 2015) compared peer assisted learning as a specific aspect of paired placements, finding no significant improvements to learning outcomes using this model, though both students and educators preferred practice placements that did not include specific peer learning activities.

Some potential issues and concerns related to this model were identified as increased pressure on office space (Kinsella and Piersol, 2018), possible lack of opportunities to work with service users (Kinsella and Piersol, 2018; Price and Whiteside, 2016) and reduced time for individual student supervision (Briffa and Porter, 2013). However, a number of strategies to optimise the use of the peer-assisted model were reported. Preparing students and educators is important, and ought to include training in facilitative peer-feedback processes, as well as underpinning theories and principles (Blakely, 2009; Briffa and Porter, 2013; Lynam et al., 2015; Secomb, 2008). Advanced preparation ensures effective organisation and achievement of day-to-day learning activities, and assessment of placement learning outcomes (Hanson and Deluliis, 2015). Similarly, careful pre-placement consideration should be given to matching peers based on academic experience and performance, and potential personality clashes (Briffa and Porter, 2013; Kinsella and Piersol, 2018; Secomb, 2008). Price and Whiteside (2016) reported that educators developed strategies to support the use of this model including using evidence-based approaches, careful preparation, utilising organisational support, and being positive and pragmatic. However, Dawes and Lambert (2010) found that many practice educators had initially used the model due to short notice requests to take students, rather than a planned

approach including training and support, as advocated by Hanson and Deluliis (2015). Dawes and Lambert (2010) also suggests that success may depend more on the attitudes of educators than the specifics of their clinical setting.

Team model

Team model placements involving two or more educators sharing the supervision of one student were considered in two papers, both lacking empirical study. Engel et al. (2013) described a team-model placement with a single student, while Beisbier and Johnson (2016) partially reported on a qualitative information gathering exercise about this model with practice educators. Potential benefits were noted to include increased diversity of learning opportunities for students, increased provision of placements due to reduced impact from part-time work and scheduled days off, and opportunities to support the development of novice educators by including them in the supervisory team. Preparation was seen to be key to ensuring learning opportunities, as was effective communication and flexibility from those involved. Some consideration was given to issues associated with this model, including concerns about additional caseload management challenges and workload; educators being open, honest, and prepared was noted as a way of managing this.

Multiple mentoring model

Multiple mentoring describes a team of educators supervising a team of students, essentially combining team and peer-assisted models. Two papers studied this approach, with occupational therapy practice educators (Copley and Nelson, 2012), and social work students (Zeira and Schiff, 2010). Planning to ensure sufficient support and monitoring for students was identified as important by practice educators in Copley and Nelson's (2012) qualitative study, which also highlighted the importance of educators collaborating with colleagues so that different working practices did not restrict opportunities for student learning. Copley and Nelson (2012) noted that students needed well-developed time management skills to be able to articulate with educators' differing schedules. As with team models, opportunities for part-time or less experienced therapists to contribute to placement provision were increased.

Zeira and Schiff (2010) followed social work students in a pilot multiple mentoring scheme over two years, comparing experiences and outcomes with those receiving the one-to-one model.

The only significant differences between models were how students perceived the content of supervision and the relationships with their educators; learning experiences with clients, and development of professional values were unaffected. Zeira and Schiff (2010) reported that the model was ultimately abandoned by educators in favour of the one-to-one model, and that it had not proved cost effective over the two-year period due additional costs of training, and providing supervision for educators.

Long arm supervision

Long-arm supervision is provided by an experienced clinician who is not based at the same location as the student. Examination of this model in 11 papers including three different professions reported similar benefits associated with professional skills. These include self-confidence, interpersonal skills, and professional independence and identity (Clarke et al., 2014; Mantzourani et al., 2016; Rodger et al., 2009,). Dancza et al. (2013) reported generally positive student experiences associated with improved opportunities for clinical reasoning by requiring less demonstration of procedural skills, and identified development of stronger professional identify, a claim similarly made by Thew et al. (2018). Wider benefits beyond student outcomes included the assertion that successful placements could encourage future utilisation of occupational therapy services (Rodger et al., 2009), or lead to the creation of occupational therapy posts (Kearsley, 2012; Schmitz et al., 2018). Long-arm supervision may create more placement places (Maynard et al., 2018), and can be used intentionally to create placements in specific practice areas (Schmitz et al., 2018).

Limitations of this model included restricted opportunities for professional socialisation, reduced role clarity, and increased communication challenges (Thew et al., 2008; Maynard et al., 2015). Collaborating with services unfamiliar with a profession's role, along with the emotional challenges of practice-based learning, were reported to affect professional identity (Dancza et al., 2013), and Cleak and Smith (2012) found that social work students who experienced long arm supervision were significantly less satisfied with the learning experience. Dancza et al. (2016) also identified that students receiving long-arm supervision needed additional support to compensate for less frequent contact with an educator. Linnane and Warren's (2017) survey of occupational therapists and students indicated that while the model was felt to be effective, there was apprehension associated with the lack of access to profession-specific role models and misunderstandings from host services on student role.

The model is often combined with other supervisory approaches, such as peer-assisted learning (Rodger et al. 2009) and project work (Thew et al., 2008). Peer support has been reported as being crucial for long-arm models (Dancza et al., 2013), while the findings of Zuchowski's (2016) phenomenological study stressed the importance of relationship building, role clarity, and ensuring supervisors understand specific placement contexts.

Dedicated practice educator model

Dedicated practice educators have time set aside from normal clinical caseloads so they can supervises several students, or provide enhanced support for colleagues providing supervision. This model was only addressed in the by Ferguson et al. (2014) that reported its contribution to increased capacity to provide placements in dietetics, by improving support available to newly qualified or part-time practitioners, maintaining student satisfaction.

Project focused model

This model of practice education sees a student work on a project as the focus of their placement. Student nurses stressed needing time to adjust this type of experience, and reported initially fearing the scale of a project focussed placement (James et al. 2016). However, James et al. (2016) reported that after completing projects, students acknowledged the development of personally and professionally transformative skills. Fortune and McKinstry's (2012) evaluation of project placements indicated that students and host services both reported development of advanced communication, influencing and leadership skills, along with an increased sense of reciprocity between the education institution and host organisation. However, issues associated with the project models noted by Fortune and McKinstry's (2012) included difficulty accessing university support, and a perception that they may less useful than clinically focused opportunities.

Hub and spoke model

Hub and spoke models provide a base (hub) for students with an identified PE, but require the student to spend significant portions of a placement with different departments, organisations, institutions, or agencies (spokes) who collaborate to provide learning opportunities. Three qualitative studies considered this model; two exclusively from a nursing perspective (Roxburgh

et al., 2012; Roxburgh, 2014), and one involving nursing and social work students (McClimens and Brewster, 2017). Reported advantages of hub and spoke models included exposure to complex inter-agency care, and deeper understanding of the patient journey, despite initial student concerns about changing location more frequently (McClimens and Brewster, 2017). Roxburgh et al. (2012) concluded that students developed deep learning, empathy and sensitivity to the individual at the centre of the care. Due to the increase in stakeholders, the model needed effective support from the partner education institution (McClimens and Brewster, 2017).

Student-led university-based clinics

In this model, students run clinics for specific populations in the university, with support and supervision from practice educators and academics. Three papers considered this model with both an inter-professional focus and mixed client group (O'Brien et al., 2013), and single profession clinics (Baril, 2013; Wilbur et al., 2017). Group supervision, peer-assisted learning and project work are all embedded in the clinic model with various benefits being reported. A survey of interprofessional students reported improved understandings of other professional roles and enhanced integrated working skills (O'Brien et al., 2013). Two studies of occupational therapy clinics focused on how clinics were organised more than investigating experiences and outcomes, however Baril (2013) noted that ensuring sufficient involvement from practicing therapists was key to effective supervision, and served to improve student experiences, despite initial concerns that the clinic was more like being at university than on placement. Wilbur et al. (2017) described a clinic-based placement, but did not report on outcomes of benefits.

Simulation

Simulated practice placements use mannequins, actors, simulated environments, video or interactive computer packages for learning. No papers considering simulation were initially included, however the authors became aware of, and included, three papers reporting the development of a simulation framework (Chu et al. 2019), and subsequent randomised controlled trial (Imms et al., 2018) and economic evaluation (Gospodarevskaya et al., 2019) published after the literature search. Chu et al. (2019) presented a conceptual framework for simulated placements intended to structure the organisation and application of learning and simulation theory. Imms et al. (2018) conducted an RCT with 570 students to investigate the

effects of a 40 hour simulated placement, using the framework developed by Chu et al. (2019), compared to traditional placement. Short, high quality, simulated placements were found to be as effective as traditional placements of equivalent duration in terms of student attainment (Imms et al. 2018). The economic evaluation conducted by Gospodarevskaya et al. (2019) concluded that simulations were more cost effective than traditional placements for healthcare providers, with the opposite being the case for universities. This evaluation also reported that students valued traditional placements ahead of simulations.

Intra-agency collaboration

Van der Riet et al. (2018) studied a model in which nursing students had all of their placements over three years within a single healthcare organisation. This model was developed to address a perceived lack of continuity in education experienced by students while maintaining diversity of experience by attending placements in different specialties. Findings included students experiencing greater feelings of belonging and acceptance, increased confidence and improved learning experiences. Van der Riet et al. (2018) did note however, that some students suggested they might have benefited from opportunities associated with working with different organisations.

Clinical education wards

Clinical education wards are situated within hospitals but are staffed primarily by students with appropriate support. Manninen et al. (2015), used an ethnographic approach to examine the experiences of nurse educators on a clinical education ward, finding that student learning was facilitated by increased independence, though educators experienced challenges balancing student autonomy, support for learning and patient safety. Manninen et al. (2015) concluded that the education ward model had value because it allowed an equal focus on care provision and student education, and was successful when educators worked effectively as a supervisory team.

Interprofessional placements

Interprofessional placements occur when students from different professional programmes learn collaboratively in practice. McCombe et al. (2018) completed a pilot study using action research

methods with social work and nursing students, while Brault et al. (2015) used focus groups to discuss interprofessional placements with students, educators, placement coordinators and managers. Both studies highlighted the importance of partnership working between universities and placement sites to ensure logistical issues were solved, such as timing of placements and ensuring sufficient facilitation. Improvements in team working were reported (Brault et al., 2015), along with increased understanding of professional roles and communication skills (McCombe et al., 2008).

Student-Led Groups

This approach, in which practice education is achieved by groups of students taking responsibility for providing therapy groups, typically for a specific population was studied by van Patterson et al., (2017). In their paper, occupational therapy placements were focused on the continuing organisation and delivery of several therapy groups for inpatients recovering from brain injuries. Successive group placements were planned with a one-week handover between student groups. Student groups were usually pairs or trios and supervision was shared by the wider occupational therapy team, using both group and one-to-one methods. Students reported opportunities to enhance communication skills, integrate theory with practice and develop clinical reasoning and practice, though some felt they missed learning opportunities available in other placement models, such as working one-to-one with service users.

Hybrid approaches

Five papers reported on practice education experiences that used combinations of two or more other distinct approaches. Boniface et al. (2012) developed a pyramidal learning approach that combined peer-assisted learning between UK students and overseas exchange students with long-arm supervision, reporting development of professional autonomy and greater opportunities for experiential learning. A similar approach, combining peer-assisted and long arm models for a project-focussed placement (Thew et al., 2008) reported initial positive student experiences tempered by the need for significant preparation. However a later evaluation of the same model (Thew et al., 2018) reported clearer benefits in terms of developing professional identity, self-belief enhanced skills and the facilitation of occupation-focussed service development and delivery. Knightbridge (2014) also explored a peer-assisted, long-arm, project combination, reporting similar areas of benefit; improved experiential learning, growing personal

confidence and enhanced awareness of, and ability to reflect on, wider influences on practice. Rindflesch et al. (2009) reported on a model that combines a dedicated practice educator (termed a clinical education coordinator) providing practice education for groups of occupational therapy and physiotherapy students. The model was reported to be cost effective and increased placement opportunities, while promoting professional development more effectively than the one-to-one model. Supporting people to transition into the dedicated practice educator role was seen as important and key to success.

DISCUSSION AND IMPLICATIONS

The present mapping review analysed approaches to delivering practice education for health and social care professionals. Key findings from the 53 papers reviewed include notable gaps and limitations, and some clear trends that may be relevant for continuing efforts to increase practice education capacity.

The bubble chart presented in Figure 2 illustrates the sparsity of high quality primary research and subsequent secondary review and analyses that could indicate convincing evidence bases upon which to make practice recommendations. Of the six papers in the high quality band suggested by Turner Stokes et al (2006), three were descriptive reviews of peer-assisted learning, two referred to the same study examining simulation, and one was a well-designed phenomenology of student experience. Most papers were assessed as being moderate or poor quality qualitative and mixed methods studies, with isolated examples of quantitative designs identified. Combined with the significant degree of diversity in the approaches to practice education reported in the reviewed papers, the current evidence base does not allow clear recommendation for specific models to be made.

A second significant set of limitations relates to how outcomes or effects are considered, specifically the heterogeneity of outcomes examined, the lack of use of validated measures, and limited selection of points at which effects were assessed. With the exception of the RCT by Imms et al (2018), and its associated economic evaluation (Gospodarevskaya et al. 2019), measurement in quantitative studies focused on narrow outcomes. For instance, the RCT by Sevenhuysen et al. (2014) evaluated the time released for non-student activities and the volume of feedback provided to students, while Zeira and Schiff (2010) and Cleak and Smith (2012) used survey methods to assess satisfaction with the models used. Students' and practice

educators' satisfaction with and/or opinion of different models also featured prominently in ten of the twelve mixed methods reviewed. Most of the qualitative studies explored stakeholder experiences and included student and practice educator identified and reported effects. These typically related to perceived development of individual competencies or skills, the type and quality of different learning opportunities, and subjective appraisal of value. Overall, few validated methods were used to collect data, and while investigating satisfaction with a new model of practice education is important in establishing whether it is likely to be acceptable to a wider population, it does not provide a sufficient evidence for the value of a new approach on other relevant constructs.

While this presents obvious issues with the production of high quality evidence, it is worth noting that there are few tools available for assessing their outcomes, and it has been recognised that evaluating education methods in health and social care more broadly remains pragmatically and methodologically challenging (Attree 2006). The work by Imms et al (2018) comparing the effectiveness of simulation with traditional placements provides an example of perhaps the most well developed set of outcomes measures, including as primary outcomes, written examination results, placement grades and a standard measure of student performance on placement. However, this exemplifies the limits in current evaluation of practice education, which does not tend to extend beyond short-term effects and stakeholder perceptions. The study of new ways of providing practice education would be enhanced by the development of conceptually structured ways of investigating the impact of practice education models that consider wider outcomes, like whether learning transfers to other practice education experiences or environments, and whether there are tangible effects on the quality of service provision. These issues are not exclusive to allied health and social care professions. Authors considering the effects of education initiatives to enhance inter-professional (Freeth et al. 2002) and evidence based medical practice (Tilson et al. 2011) have noted the lack of valid measurement tools and longitudinal evaluation. In both these examples, Kirkpatrick's (1998) framework for evaluating training programs was recommended as a structure to development assessment techniques. This framework proposes assessment of four levels that include reactions to the educational experience and associated learning or skill development, both constructs that were considered by papers in this review, but also behaviour change and results. These latter constructs, which in health and social care could include professional practices and associated benefits to services users, were reported infrequently in the reviewed papers. Various metrics limited to narrow indicators of productivity were reported, such as time spent with services users

(Bhagwat et al. 2018), patient throughout (Dawes and Lambert 2010; Ferguson et al. 2014), and subjective claims about departmental productivity (Hanson and DeIuliis 2015).

Despite being the impetus for the development of alternative practice education approaches, whether a model increased individual, team or services' capacity to provide practice education was only addressed in six studies. However, as with other outcomes, the different methods used were not sufficient to make convincing or consistent claims about the contribution of specific models. Approaches used to evaluate effects on placement capacity included comparing the number of students provided with a placement over a given time period (Reidlinger et al. 2017; Ferguson et al. 2014), collecting qualitative feedback from health professionals about capacity (Maynard et al. 2015; Schmitz et al. 2018; McCombe et al. 2008), and the authors' opinions (Rindflesch et al. 2008). While observing the number of placements offered, and asking stakeholders to estimate effects on capacity may be practical, and can be achieved with a good degree of reliability, focusing solely on capacity without concurrently considering the associated quality of practice education approaches is an issue. Significantly increasing the number of placement opportunities may come at the expense of learning outcomes, student and educator satisfaction, and ultimately service quality and related service-user outcomes. Few reviewed papers consider this potential compromise, though the pilot study of long-arm supervision by Roberts et al. (2009) suggested that an increase in student placement hours compared to a traditional one-to-one model was not associated with negative impacts on student achievement or service resource demands. Two RCTs examining peer assisted learning (Sevenhuysen et al. 2014) and simulation (Imms et al. 2018) both found that student performance was comparable with the one-to-one model used as a control. While the study by Sevenhuysen et al. (2014) found no difference in educator workloads or service provision, its sample size (n=24) may not have been sufficient to detect changes. Conversely, the RCT by Imms et al. (2018) was adequately powered, but the associated economic evaluation (Gospodarevskaya et al. 2019) did not examine changes in service productivity associated with the presence or absence of students.

While this review demonstrates there is no consistent high-quality evidence for the effectiveness of specific model of practice education, the range of different models used, their various descriptions and the degree of crossover between approaches, suggests that there are many ways of delivering practice education, each of which has the potential to be effective. Most studies either reported positive findings, or found the model being studied to be as effective as

one-to-one supervision. While this may be attributable to publication bias, the results of qualitative methods, along with authors' interpretations and discussion provide some useful insights in to the challenges associated with developing and implementing different practice education models.

First, is the importance of preparation. The use of different practice education models is typically associated with new ways of learning and practices for supporting this. Ensuring students and practice educators were informed of underlying theories, supervision and support methods, and had sufficient time to plan for alternative ways of working were among the recommendations or discussions noted in eleven papers (see table 2 for details). Effective communication between different stakeholders was noted to be a key component of these preparations. Second, the perceived benefits associated with using non one-to-one models typically reflect advanced professional skills, rather than specific technical competencies. Self-confidence or self-belief, personal and professional autonomy, independent learning skills, professional identify, interpersonal skills, and organisation and time management abilities were reported to be associated with different practice education models. Finally, initial concerns about adopting new models tend to dissipate over time for both students and practice educators. For students this occurred once initial unfamiliarity or uncertainty had passed (James et al., 2016; Knightbridge, 2014; McClimens and Brewster, 2017). For practice educators, it appears that concerns and issues can decrease once sufficient time has elapsed for them to develop the skills and experience needed for new forms of practice education (Beisbier and Johnson, 2016; Copley and Nelson, 2012; Rindflesch et al., 2009; Roberts, 2009). However, these tend to be anecdotal reflections on the implementation of new models, and one longitudinal study considering a multiple mentoring approach in social work education ended with this approach being abandoned after two years following difficulties managing a range of organisational and interpersonal issues (Zeira and Schiff, 2010).

However, it is also worth noting that, despite these possible benefits, it was more common for students to express preference for, or higher levels of satisfaction with, the traditional model of one-to-one supervision than an alternative. This trend was seen in the papers that explicitly addressed student preference of satisfaction between different approaches to practice based learning; simulation (Gospodarevskaya et al. 2019), peer assisted learning (Sevenhuysen et al 2014; Kinsella and Piersol, 2018), and long-arm supervision (Cleak and Smith 2012; O'Conner et al. 2012). When reported, explanations for this preference included concerns about reduced

quality and quantity of supervision when using alternative models (Sevenhuysen et al. 2015; Kinsella and Piersol, 2018), and it being easier to demonstrate autonomous working in one-to one relationships (O'Connor et al., 2012), and reduced opportunities to observe the practice educator. There would be value in developing further understanding of why this preference for the one-to-one student-educator model prevails. Most of the alternative models of practice education require different educator to student ratios, application of different learning theories, or changes to the relative location of students and educators. Understanding why these do not currently lead to the same level of satisfaction among students may inform how these models are developed and applied.

LIMITATIONS

Limitations of this review must be considered. First, while attempts were made to identify comprehensively papers examining practice education models used by relevant health and social care disciplines from a range of databases, inconsistencies in terminology required complicated search strategies that may not have captured all approaches used. Second, as the mapping review methodology enables categorisation of practice models, but does not offer in-depth appraisal and synthesis of included papers, the findings presented are not intended to indicate synthesised evidence supportive of practice recommendations. Finally, while the inclusion of a high number of disparate types of paper is important for identifying and organising potential models, there is risk of oversimplification, and interested readers may need to consider the original works for a full picture of approaches and methods used.

CONCLUSIONS

Fourteen models of practice education were identified in the 53 reviewed papers, though the terms used to describe these, and the methods used to study them vary and were typically of moderate or low methodological quality. Most approaches were reported to have benefits for students, and/or practice educators and their services, although comparatively few high quality objective studies were identified examining these outcomes. When experimental or observational designs were used, outcome measurement was narrow, reflecting wider, persisting issues associated with evaluating the effect of education and training initiatives. A

variety of practice education approaches may increase capacity while maintaining quality, but development of more effective ways of studying outcomes are needed, particularly those that allow for consideration of effect beyond immediate impact and measures of stakeholder reaction. From a practical perspective, the effectiveness of different models may be determined by the degree to which they can be operated within the constraints of local contexts. Although the articles included in this review present multiple ways of delivering practice education in disparate scenarios, the typology and associated evidence map provided may offer some structure for those who involved in developing and evaluating methods to facilitate practice based learning for health and social care professionals

KEY FINDINGS

- Many different practice education models are used, but there is little high quality research into their effectiveness.
- New methods for examining effectiveness of practice education are needed.
- Further research is needed into why the one-to-one model is associated with higher levels of student satisfaction.
- Consistent terminology and expanded consideration of impact would support future study.

WHAT THE STUDY HAD ADDED

This review expands and updates previous work considering practice education models. It provides an up-to-date evidence map that represents approaches used in different disciplines, and presents an organising typology to support further discourse.

RESEARCH ETHICS

No ethics approval required.

CONSENT

Informed consent was not relevant for this mapping review as it involved no participants.

Declaration of conflicting interests

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Contributorship

Joanna Beveridge and Duncan Pentland developed and executed the search strategies, screened and reviewed the returned records, extracted information and drafted the manuscript. Both authors viewed and edited the manuscript and approved the final version.

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Table 1. Search record

Database	Date range	Search Strategy	Number of records returned
Applied Social Science Index and Abstracts (ASSIA)	01-01-2008 to 25-10-2018	((MAINSUBJECT.EXACT.EXPLODE("Experiential learning") OR MAINSUBJECT.EXACT("Workplace learning") OR (MAINSUBJECT.EXACT.EXPLODE("Advanced placement programmes") OR MAINSUBJECT.EXACT.EXPLODE("Practice placements")) OR MAINSUBJECT.EXACT.EXPLODE("Practice based education")) AND MAINSUBJECT.EXACT.EXPLODE("Medical professionals")) AND la.exact("ENG") AND pd(20080101-20181025)	170
Educational Resources Information Centre (ERIC)	01-01-2008 to 25-10-2018	((MAINSUBJECT.EXACT.EXPLODE("Experiential Learning") OR MAINSUBJECT.EXACT.EXPLODE("Clinical Teaching (Health Professions)") OR MAINSUBJECT.EXACT.EXPLODE("Clinical Experience") OR MAINSUBJECT.EXACT.EXPLODE("Student Placement") OR MAINSUBJECT.EXACT.EXPLODE("Place Based Education")) AND MAINSUBJECT.EXACT.EXPLODE("Health Services")) AND (stype.exact(("Scholarly Journals" OR "Dissertations & Theses" OR "Speeches & Presentations" OR "Conference Papers & Proceedings" OR "Other Sources") NOT ("Reports" OR "Encyclopedias & Reference Works" OR "Books")) AND la.exact("ENG") AND edlevel.exact("Higher Education" OR "Postsecondary Education" OR "Two Year Colleges") AND pd(20080101-20181025))	95
Cumulative Index of Nursing and Allied Health Literature (CINAHL)	01-01-2008 to 28-10-2018	((MM "Students, Audiology") OR (MM "Students, Occupational Therapy") OR (MM "Students, Physical Therapy") OR (MM "Students, Dietetics") OR (MM "Students, Social Work") OR (MM "Students, Speech-Language Pathology") OR (MM "Students, Nursing") OR (MM "Students, Podiatry")) AND ((MM “Fieldwork”) OR (MH "Student Supervision") OR (MM "Student Placement")) Limited to: Published Date: 20080101-20181028, English Language, Academic Journals.	245
	01-01-2008 to 25-10-2019	((MM "Experiential Learning/AM/EC/ED/ES/EI/EV/LJ/MA/MT/ST/TD/UT") OR (MM "Fieldwork/AM/EC/ED/EI/EV/LJ/MA/ST/TD/UT") OR (MM "Service Learning/AM/EC/ED/EI/EV/LJ/MA/ST/TD/UT") OR (MM "Simulations+/AM/EC/ED/EI/EV/LJ/ST/TD/UT") OR (MM "Clinical Conferences/AM/EC/ED/EI/EV/LJ/MT/ST/TD/UT") OR (MM "Patient Rounds/AM/EC/ED/EI/EV/LJ/MT/ST/TD/UT") OR (MM "Student Placement")) AND ((MH "Students, Allied Health+") OR (MH "Students, Nursing+") OR	806

	(MH "Students, Chiropractic") OR (MH "Students, Dental") OR (MH "Students, Medical") OR (MH "Students, Midwifery") OR (MH "Students, Nursing, Practical") OR (MH "Students, Pharmacy") OR (MH "Students, Podiatry")) Limited to: Published Date: 20080101-20181025, English language, Peer reviewed.

Figure 1. PRISMA flow diagram of article selection (Moher et al., 2009).

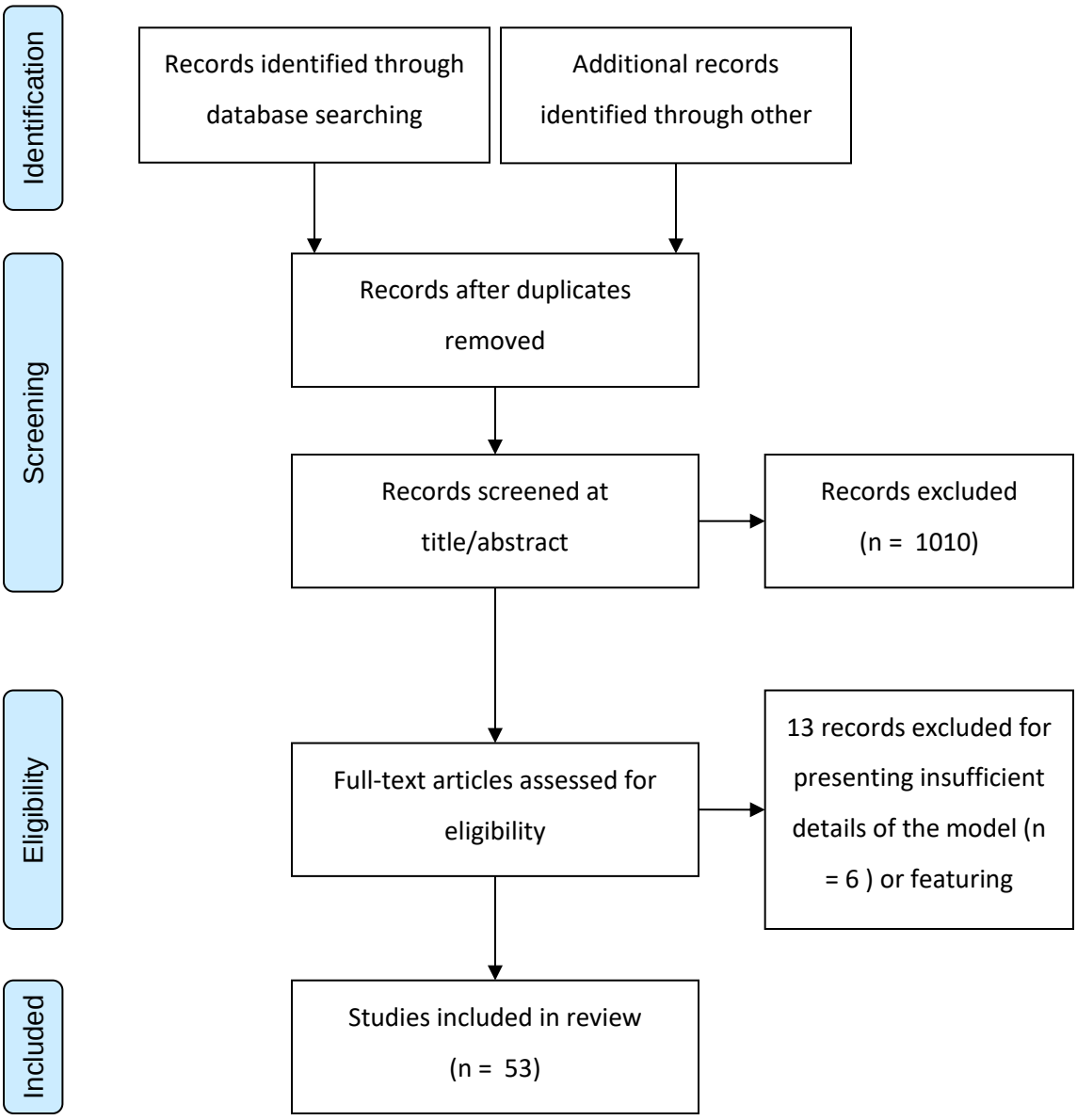

Table 2. Summary of reviewed papers.

Model	Reference	Profession(s), location, model(s) studied as described in paper	Aims of study and methodology	Key findings (advantages, disadvantages and issues)	NSF-LTC Evidence typology[i]
One-to-one	Luhanga et al. (2010)	Nursing Multiple locations One-to-one preceptorship	To critically discuss the one-to-one relationship in nursing preceptorship. Literature review of 57 papers, 40 research and 17 theory and commentary, published 1988-2008	Consistency and availability of practice educator, safe spaces for learning, individualised feedback and learning opportunities were reported as positives. Students more dependent on practice educator, higher risk of issues in relationship, increased demand on practice educators' time Practice educator experience and training in role essential.	R2 6/10 Moderate
Peer-assisted learning	Flood,et al. (2010)	Occupational therapy New Zealand Collaborative model	To discuss a collaborative model of student supervision, its operation and underpinning ideas Single case study following one educator over three placement blocks with 9 students in total	Model increases students' autonomy, and enhances learning, skills, and confidence. Careful preparation and planning is required.	P2 4/10 Low
	Secomb (2008)	Nursing, physiotherapy, occupational therapy	To review the effectiveness of peer teaching and learning as an educational intervention during clinical placements	Model increases development related to cognition, clinical and interpersonal skills. Students report improvements to confidence, autonomy, self-evaluation and collaborative working.	S2 8/10 High

	Multiple locations Peer teaching and learning	Non-meta analytic systematic review of 12 papers published 1980-2005	Planning needed to accommodate incompatible students or those with performance issues, manage academic timetables, and prepare students and practice educators for model. Multiple students reduces time for instruction from practice educators but can increase service productivity.	
Briffa and Porter (2013)	Allied health with a speech and language pathology focus Multiple locations Collaborative model	To investigate advantages and disadvantages of collaborative model of clinical education during its implementation across allied health professions. Non-meta analytic systematic review of 17 papers.	Students' independence and opportunities to practice skills on each other increased, supervision focussed on more complex issues. Practice educator administrative workload increased, time for individual supervision of students and learning opportunities for students may be reduced. Students need to be matched for academic experience and performance level. Preparation of students and practice educators is critical.	S2 8/10 High
Kinsella and Piersol (2018)	Occupational Therapy USA Collaborative model	Programme evaluation of a collaborative model for placement. Pre-post interview administered survey for 4 practice educators and 8 students.	Peer support valued by students who reported increased self-confidence and clinical competence. Practice educators reported students being less dependent. Lack of clients and office space, and personality clashes between students may be issues. Students viewed model less positively than one-to-one model due to less time with practice educators and reduced quality of supervision. Student preparation for the model is needed.	P2 5/10 Moderate
O'Connor et al. (2012)			Practice educators reported model offered greater learning experiences for students.	P2 5/10

	Occupational therapy and physiotherapy Ireland Peer-assisted One-to-one	To compare practice educator and student perspectives of one-to-one and peer-assisted placements. Qualitative descriptive approach using semi-structured interviews with 12 students and 8 practice educators.	Students preferred peer learning earlier in their programme, and one-to-one later as it gave more opportunities to demonstrate autonomy. Planning and preparation is important.	Moderate
Reidlinger et al. (2017)	Dietetics UK Peer-assisted One-to-one	To compare experiences, satisfaction and workload of students and practice educators on peer assisted learning placements with the one-to-one model. Process evaluation involving weekly data collection, and post-placement focus groups with 16 students and 35 practice educators.	Peer assisted model increased placement capacity. Students reported good learning experiences and a satisfactory workload more frequently than those on one-to-one placements. Practice educators reported spending less time on direct student supervision compared to one-to-one placements. Effective partnership working between HEI and practice educators was required before and during placements.	P3 5/10 Moderate
Bhagwat et al. (2018)	Speech and language therapy Australia Peer assisted learning One-to-one model	Examines if practice educator and student time use, and satisfaction, differs during between peer assisted and one-to-one placements. Prospective, mixed-methods cohort study using repeated time-use surveys with practice educators (n=44, 40% response rate) and students (n=32, 28% response rate).	Placement model did not affect service provided by practice educators or students and had no effect on percentage of time practice educators or students engaged in patient-related or non-patient-related activities. PAL placement practice educators' and students' satisfaction levels were equivalent to those on one-to-one models. PAL model can potentially increase student placement numbers without affecting service provision, or overall practice educator time spent at work.	P3 6/10 Moderate
Price and Whiteside (2016)	Occupational therapy	To examine practice educator experiences of using a PAL model.		P2 5/10

	Australia 2:1 model	Exploratory qualitative design using two focus groups with 8 practice educators.	Effective PAL experiences resulted in students being more resourceful, proactive and confident, and using practice educator time more effectively. Practice educators felt the model might reduce student exposure to learning opportunities, increase logistical issues and workload, reduce supervision quality, and impact service quality. Strategies to manage multiple students included considering evidence for the use of PAL, thorough planning and preparation, and securing support from host organisations and partner universities.	Moderate
Hanson and Deluliis (2015)	Occupational therapy USA collaborative model	Critical review of selected papers examining the PAL model to identify key theoretical foundations.	Model decreased practice educator supervision workload and increased service efficiency. Student ownership and responsibility for learning was increased. Advanced preparation of all stakeholders was essential.	R2 2/10 Low
Dawes and Lambert (2010)	Physiotherapy, occupational therapy and speech and language therapy UK 2:1 model	To explore the experiences of allied health professional practice educators using the 2:1 model. Interpretive phenomenological method with 13 practice educators using focus group and semi-structure interview methods.	Varied views on the effect of the model of service provision were identified, with some indicating it reduced the throughput of patients while others reported increased productivity. Success of model may be dependent on the attitude and philosophy of the practice educator, planning, open-mindedness, and ability to maximise learning opportunities.	P2 7/10 High
Blakely et al. (2009)	Occupational therapy UK 2:1 model	Descriptive single case experience exploring use of a peer-assisted model.	Student experiences were positive, particularly in relation to use of different supervision formats (individual, peer and group). Some challenges around coordinating supervision. Importance of planning was emphasised. Practice educator experience contributes to success.	P2 2/10 Low

Sevenhuysen et al. (2015)	Physiotherapy Australia Paired teaching with peer assisted learning activities	To explore experiences of students and practice educators in a paired student placement model incorporating facilitated peer-assisted learning activities compared to paired teaching approach only. Qualitative study embedded in an RCT using focus groups with 22 physio students and 12 practice educators.	Providing safe learning environments for students, reducing anxiety, reduced time required by practice educator for supervision, improved the use non-clinical time for learning, improved collaboration and feedback skills were reported as advantages. Model not an effective replacement for observing the practice educator in practice, receiving individualised feedback and guidance, or opportunities to practice clinical skills. Inter-student relationships and the practice educator's ability to design flexible but meaningful learning experiences were essential for success.	P2 6/10 Moderate
Sevenhuysen et al. (2014)	Physiotherapy Australia Peer assisted learning	To examine the efficacy and acceptability of a peer-assisted learning model compared with a traditional model for paired students in physiotherapy clinical education. Prospective, assessor-blinded, randomised crossover trial. 24 physiotherapy students.	In peer assisted placements, practice educators had an extra 6 minutes/day available for non-student-related quality activities (95% CI 1,10) and students received an additional 0.33 entries/day of written feedback from their practice educator (95% CI 0.06, 0.61). Practice educator and student satisfaction was higher with the traditional model. The peer assisted model produced similar student performance outcomes when compared with a traditional approach. PAL provided some benefits to educator workload and student feedback.	P1 6/10 Moderate
Lynam et al. (2015)	Dietetics Ireland	A pilot study exploring the implementation of a 2:1 model in dietetics.	All four pilot sites stated that they would use the model again.	P2 1/10

		2:1 model	Follow-up focus groups with advisory group members following pilot of 2:1 model at four placement sites. Number of students and number of focus group participants unreported.	Recommendations include providing more structure and guidance to all stakeholders on how to apply the approach.	Low
	Roberts et al. (2009)	Dietetics Australia Peer learning model with sequential and graded exposure to tasks	Evaluation of pilot study implementing the model with 14 final year masters students. Post placement surveys completed by 13 students and 33 hospital staff, activity statistics from organizational records, student education outcomes and qualitative data from student and staff debriefing sessions. Comparisons made with traditional models using satisfaction data collected in earlier years.	Number of student placement hours increased using the model and there was no associated negative impact on student achievement or service resource demands. Students were positive about the experience. Staff were also positive, particularly about ability to maintain clinical productivity. Some practice educators had to 'unlearn' traditional one-to-one ways of supervising.	P3 4/10 Moderate
Team model	Engel et al. (2013)	Occupational therapy Canada Integrated split placement	Descriptive report of single case (1 first-year masters student and 2 practice educators) using an "integrated-split placement" model in which two practice educators in different practice/clinical settings provide shared supervision.	Students experienced increased exposure to different roles and practice styles, and opportunities to develop autonomy and professional skills. The models can be used to find placement pairings in diverse areas by finding common roles between the areas. Planning by practice educators was crucial to ensure learning opportunities would span both areas. Communication during placement was also critical. Practice educators believe that having a mature and self-determined student helped to make the placement a success. The student felt the Practice educators needed to be open, honest, and prepared.	P2 1/10 Low
	Beisbier and Johnson (2016)	Occupational Therapy USA	To explore responses of practice educators to the concept of collaborative model of fieldwork education, and to establish supports necessary for its application.	Concerns about model were in relation to caseload management and general supervision. Training was given and the use of the model rose from 2% to 28%.	P3 2/10 Low

		Collaborative fieldwork education	Mixed data gathering methods used including informal interviews and group discussion and a cross sectional survey with practice educators. Full details of participants and methods not specified in detail but reported to be more than 30.		
Multiple mentoring	Copley and Nelson (2012)	Occupational Therapy Australia Group supervision	To explore the perceptions of practice educators regarding use of multiple mentoring in different settings, and to determine essential features of the model and how it can best be implemented. Focus groups with 15 practice educators in HEI clinic, hospital, and community-based services	Planning was key and practice educators needed to be organised to facilitate individual supervision. Important practice educator qualities were an appreciation of others' clinical practices, collaborative working and ability to discuss their clinical reasoning. Students needed to have good time management skills to fit in with multiple practice educators' schedules. Initial increases in stress associated with organisation diminished over time. Model allowed part-time or less experienced staff to supervise students.	P2 4/10 Moderate
	Zeira and Schiff (2010)	Social work Israel Group supervision	To compare students experiences of group supervision with those receiving individual supervision. Quasi-experimental design with three cohorts of students (total n = 305) in 11 learning centres.	No significant differences between the two groups in the students' experience with intervention with clients and their ability to develop professional values. Students in the group model reported poorer relationships with their practice educators and the group supervision was abandoned after 2 years.	P1 5/10 Moderate
Long arm supervision	Mantzourani et al. (2016)	Pharmacy United Kingdom Role emerging	An evaluation of a pharmacy long arm supervision placement. Action research with 110 first year students.	Students improved their communication skills, confidence, ability to interact with a member of the public and their understanding of pharmacy related issues individuals faced.	P2 4/10 Moderate

			Initiating conversations was an issue but this was tackled through training and the development of leaflets to share with groups.	
Rodger et al. (2009)	Occupational therapy Australia Role emerging and collaborative learning	An evaluation of a pilot trial of two placement models – a peer-assisted approach and a long-arm model Surveys administered pre and post placement with 6 occupational therapy students and 6 practice educators.	Peer-assisted model was better understood than long arm model. Benefits of long arm supervision at the start of placement were felt to be independence, and that a successful placement would encourage future employment/utilisation of occupational therapy services. Overall benefits were an increase in students' confidence in their abilities, time management and autonomous working. Concerns at start with peer-assisted model related to whether sufficient service users would be available, and if students would receive one-to-one supervision. Post placement, students said most supervision was not individual and practice educators reported concerns that a weaker student might be carried by their peer. Practice educators expressed concerns about time available to check work, and differing cultures and values between students and practice educators.	P3 4/10 Moderate
Clarke et al. (2014)	Occupational therapy United Kingdom Long arm supervision	To gain a deeper understanding of occupational therapy students' experiences of long arm supervision. Interpretative phenomenological analysis with 5 pre-registration MSc occupational therapy students	Awareness of change in terms of personal and professional development including a new sense of self, views of the profession and affirming a belief in occupation, and making a difference to clients and teams indicated transformative learning in the students. Students and practice educators need to be cognisant of different ways of role modelling	P2 7/10 High

			professional behaviours, values, beliefs and ways of being when practice educator is off site.	
Dancza et al. (2013)	Occupational therapy United Kingdom and Ireland Long arm supervision	To examine the students' view of their learning experiences in long arm supervision placement settings, across two countries. Two separate qualitative studies using semi structured interviews with 10 undergraduates and postgraduates.	Adapting to less doing, more thinking and planning, collaborative working, emotional extremes, and using the occupational therapy perspective were main findings. Challenges were keeping an occupational focus; working collaboratively and managing expectations of services unfamiliar with the profession; dealing with the emotional extremes associated with learning; and remaining focused within an inconsistent placement pace. Supervision and peer support were crucial to success of placement.	P2 5/10 Moderate
Kearsley (2012)	Occupational Therapy United Kingdom Role emerging	Description of long arm supervision placements and the impact on the service and service users	A single long arm supervision placement led to 9 OTs being employed by a charity. Occupational therapists, students and HEIs should work in partnership to develop and support such placements, to foster entrepreneurial skills and work with wider populations.	P2 1/10 Low
Schmitz et al. (2018)	Occupational Therapy Canada Role emerging	Summary of findings from a national evaluation of long arm supervision placements in 13 of the 14 Canadian occupational therapy programmes. Mixed methods cross-sectional programme evaluation.	Long-arm supervision can be used to generate placement opportunities in specific areas of practice or to supplement placement capacity. Some of the placements may then evolved in to paid occupational therapy positions, though establishing this link can be challenging.	P3 3/10 Low
Maynard et al (2015)	Social Work USA Off-site supervision	To investigate the benefits and challenges of the model and investigate how to ensure it is effective in promoting the quality of students learning.	Benefits included a richer educational experience for the student, mutual support between the long arm practice educator and on-site mentor, and meeting placement capacity challenges.	P2 3/10 Low

		2 think tanks and various focus groups, completed over 11 years with 25 HEI social work staff.	Concerns about the quality of students' placement including lack of professional socialisation, lack of clarity around roles and expectations, and communication issues were expressed. Difficult to ascertain if any of the issues raised changed over the 11-year period or how changes over time were measured.	
Linnane and Warren (2017)	Occupational Therapy Ireland Role emerging	To investigate occupational therapists' and occupational therapy students' perceptions of the model and whether it should be part of occupational therapy programmes in Ireland. Descriptive research using a survey of occupational therapists (n = 60) and occupational therapy students (n = 45).	Model was felt to be effective for student learning as it can assist students to apply theory in practice, be creative and become more autonomous. Participants felt cautious about its inclusion within occupational therapy programmes and felt part-time placements using this model were the most appropriate way to introduce it.	P3 5/10 Moderate
Zuchowski (2016)	Social work Australia Placements with external supervision	To investigate the experiences of key stakeholders in placements with long arm supervision. Phenomenological study of fifteen social workers using semi-structured interviews.	Long arm practice educators need to understanding the context, the service, the student and the staff on the placement to provide suitable supervision. Building relationships and clarifying roles was crucial. Time and cost required to carry out effective long-arm supervision needs to be acknowledged.	P2 3/10 Low
Cleak and Smith (2012)	Social work Australia Team long arm with one-to-one and interagency models	To identify supervision models and student satisfaction with their learning experiences and the supervision received on placement. Observational, cross-sectional survey (n=263, 75% response rate).	Students were more satisfied when there was a strong onsite social work presence. Students receiving long arm supervision were significantly less likely to be satisfied with their learning experiences. The study did not examine what the specific constraints on learning were when long arm supervision was implemented.	P1 4/10 Moderate

	Dancza et al. (2016)	Occupational Therapy United Kingdom Role emerging with peer learning	Describes the development and evaluation of a workbook to reinforce the integration of theory into practice on a long arm supervision placement. Action research collecting data from semi-structured interviews with 14 final year occupational therapy students and 3 off-site occupational therapy practice educators.	The workbook can be used to in addition to specific feedback and supervision on long-arm supervision placements. The workbook was received positively by students and off-site practice educators. The content of the workbook may be specific to local occupational therapy HEI contexts.	P2 4/10 Moderate
Dedicated practice educator	Ferguson et al. (2014)	Dietetics Australia Dedicated practice educator	To evaluate the role of the dedicated practice educator role on its ability to increase placement capacity while maintaining staff productivity morale. 3 focus groups with 15 participants, semi-structured surveys and department activity measures.	Model achieved a 165% increase in student placements. Dedicated practice educator acted as a "manager" of practice educator teams, which increased the pool of available practice educators, including newer graduates and part-time staff. Students were satisfied with the model and service activity was unaffected. A weekly peer support group was initiated for practice educators and students to support professional growth and development.	P3 4/10 Moderate
Project placements	James et al. (2016)	Nursing United Kingdom Quality improvement project practicum	To explore student nurses' experiences of carrying out a quality improvement project placement. Qualitative study using semi structured interviews with 18 student nurses and data gathered from 50 reflective assignments carried out after the project placement.	The students reported a sense of achievement at the end of the placement as they had developed quality improvement skills. They acknowledged that practice educator support was crucial. Students experienced fear and anxiety around the enormity of the assignment, and reported needing to be brave to try to change practice. Students highlighted the necessity of time in practice areas to acclimatise, socialise and conduct the project.	P2 6/10 Moderate

	Fortune and McKinstry (2012)	Occupational Therapy Australia Project placement	To explore the perceptions of agency sponsors and students who participated in a project placement. Grounded theory evaluative study using questionnaires and interviews. 33% student surveys were returned (n=11); 11 project sponsors interviewed.	The students implemented the advanced communication and social influence skills required for effective leadership roles. Project seen to be a way HEI can 'give back' to the organisation rather than just "taking" a placement. Some students highlighted difficulty accessing required HEI supervision. Perception that project placements may occur at the expense of clinical placements.	P2 5/10 Moderate
Hub and spoke model	Roxburgh et al. (2012)	Nursing United Kingdom Hub and Spoke	To evaluate the impact of hub and spoke placements in geographically diverse locations. Multiple case study design involving three HEIs and three variations of the model with 1st to 3rd year undergraduate student nurses and their mentors, precise sample size not provided.	Spokes enable students to enhance their understanding through observing the patient journey. Practice educator preparation and planning of student experiences in the hub and the spokes required. Enhancing the student learning experience should be paramount rather than focusing on an HEI issue of placement capacity.	P2 4/10 Moderate
	Roxburgh (2014)	Nursing United Kingdom Hub and spoke model Rotational model	To explore undergraduate nurses' perceptions of the hub and spoke model, and the rotational model. Qualitative focus groups with 35 level 2 undergraduate student nurses.	Experiencing the hub and spoke model in 1st year made students realise they could cope with the demands of nursing and that they felt better prepared for the rotational model in 2nd year. Traits of resilience, belongingness and self-confidence in orientation to learning in hub and spoke experienced students were identified. Challenges around students integrating into and feeling accepted by the team were reported more on rotational placements.	P2 3/10 Low

				Student nurses require a structured and supportive 1st year learning environment to enable development of resilience for subsequent years.	
	McClimens and Brewster (2017)	Joint Learning Disability/ Social Work United Kingdom Hub and spoke model	To examine student and placement providers' perspectives of a hub and spoke placement. Case study of two hub and two spoke placements, including staff, service users, and students taking a joint learning disability and social work degree.	Model encouraged integration of student experience within the realities of inter-agency working. Students were able to see the intricacies of the 'patient journey. Model needs to be well supported by HEI staff. Students commented that they had several "first days" with this model but overcame this.	P2 2/10 Low
Student-led university-based clinics	O'Brien et al. (2013)	Inter-professional sample New Zealand Inter-professional HEI-based clinic	To explore students' perceptions of an inter-professional university-based clinic placement and the utility of an Inter-professional education questionnaire. Cross-sectional survey of health science students (n=37).	Students valued the placement highly, with no differences between professional groups noted. Students developed a better understanding of Inter-professional working and professional roles. It is uncertain if Inter-professional education translates into collaborative practice and improved patient care.	P3 3/10 Low
	Baril (2013)	Occupational Therapy Canada University-based clinic	To share the learning from the creation of a university based clinic. Qualitative analysis of data collected using questionnaires, interviews, logbooks, evaluation information associated with 16 students and 2 academic-clinicians.	A lead practice educator is required for each student though group supervision and peer learning were utilised. Students found that having their placement in the same building where they studied felt as if they were at HEI, rather than on placement.	P2 3/10 Low

				The length of time it takes to develop partnerships with new services should not be underestimated. Practice educators had to balance this with their academic roles.	
	Wilbur et al. (2018)	Occupational Therapy USA Student run clinics	Description of fieldwork models including the use of student run paediatric and adult clinics at HEI with each student working with a one child and one adult each, twice a week over a 16-week semester, with supervision from a practice educator.	Benefits for service users who value participating in student education and their community by using the clinic. Students have opportunities to develop professional reasoning, evidence-based practice, interpersonal skills and leadership skills.	P2 1/10 Low
Intra-agency collaboration	van der Riet, et al. (2018)	Nursing Australia Collaborative clinical placement model	Presentation of the design and implementation of a collaborative clinical placement model, including students' perceptions and experiences of this model. Qualitative descriptive study with 14 third-year nursing students.	This model promoted a sense of familiarity, leading to feelings of belongingness, acceptance, confidence and meaningful learning experiences. Some students realised they needed broader clinical opportunities. Model may decrease student stress as they only work with one organisation.	P2 6/10 Moderate
Education wards	Manninen et al. (2015)	Nursing Sweden Clinical education ward	To explore practice educators' approaches to student learning in a clinical education ward. Ethnography based on 10 observations with 10 patients, involving 11 students and 5 practice educators.	Students had autonomy, which created pedagogical challenges for the practice educators. They handled these challenges by collaborating as a practice educator team and taking different approaches. Team supervision meant students felt they missed individual feedback and support. Practice educators saw supervising students and patient care as equally important and consider them as a whole, not separately.	P2 5/10 Moderate

Inter-professional placements	McCombe et al. (2008)	Social work and child branch nursing United Kingdom Inter-professional placements	To create and develop placement capacity for health and social care students that included exposure to experiences of and about Inter-professional working and learning. Action research analysing data from questionnaires, telephone interviews and focus groups with 9 steering group members, 1 children's centre manager, 7 facilitators, 52 students and 76 workshops attendees.	Effective partnership working with stakeholders was key to the success of the project. The model provides students with an opportunity to develop into effective collaborative practitioners. Issues uncovered and dealt with included the logistics involved in timing student placements, development and use of the facilitators' workbook, and ensuring enough facilitators. Service user involvement in evaluation was limited. There is scope to involve parents more fully in the design and delivery of inter-professional placements.	P2 5/10 Moderate
	Brault et al. (2015)	Inter-professional Canada Inter-professional placements	To report a pilot project in which Inter-professional learning activities (ILAs) were implemented during multiple placements. Focus groups with participants (n=70) in four pilot sites involving students (31), practice educators (28), learning coordinators (4) and education managers (7).	ILAs have potential to transform clinical practices to increase collaboration between practitioners and foster team development. ILAs were not applicable to each area and should be tailored to fit each service. Key strength of project was that it was organised jointly by HEI and healthcare organisations.	P2 5/10 Moderate
Student-led groups	Patterson et al. (2017)	Occupational Therapy Australia Student-Led Groups Program	To investigate student experiences and perceptions of the Student-Led Groups Program placement model in an inpatient brain injury rehabilitation unit. Phenomenological approach with 15 pre-registration students.	Model facilitated independent learning and autonomy that was balanced with support from clinicians and peers. Students perceived that they had developed a breadth of clinical skills, although felt they had missed some learning opportunities in this placement structure. Structured and consistent approaches to supervision were valued, including peer support.	P2 7/10 High

Simulation	Imms et al. (2018)	Occupational Therapy Australia Simulation	To evaluate whether occupational therapy students completing a 40-hour simulated placement attained non-inferior learning outcomes to students attending a 40-hour traditional placement. Randomised Controlled Trial of 570 students from six Australian universities.	Students achieved equivalent learning outcomes from the simulated placement to those from the traditional placement. Simulated placements offered greater opportunities for students to demonstrate behaviours and competencies compared to traditional placements. The simulated placement was only trialled for 40 hours. Set up costs of simulated versus traditional placement uncertain. Ensuring the complexity of traditional placements are mirrored in simulations is important. No student failed either placement, which was uncharacteristic of other cohorts.	P1 9/10 High
	Chu et al. (2019)	Occupational Therapy Simulation Australia	To present conceptual framework for developing simulated clinical placements. An iterative process was used to synthesise learning and simulation theory, findings from empirical literature, and the views and ideas from experts in occupational therapy practice, education and simulation-based learning.	The framework provides a learning theory based means to develop simulation experiences that meet quality criteria for the replacement of a traditional placement. Developing an authentic and complex simulated placement requires significant resource to train staff, and develop learning materials and environments. Concerns about the potential high cost of developing, implementing and maintaining simulated placements need to be considered. Evidence is required about the impact simulation has in relation to improving learning outcomes for students.	R2 7/10 High
	Gospodarevskaya et al. (2019)	Occupational Therapy Australia Simulation	To provide cost-benefit analyses of traditional and simulated placements and assess the value for money of simulated clinical placement.	The simulated placement could be a cheaper alternative for HEIs. From a value-for-money perspective, participants favoured traditional over simulated placement.	P1 9/10 High

			Economic evaluation using study-specific outcomes, available health sector costs, and 'willingness-to-pay' for both models was estimated using both a Discrete Choice Experiment and a Contingent Valuation method.	Participants were aware of the importance of traditional placement availability and opportunity to demonstrate competence for students during the placement. Costs for students not studied, nor was any increase or decrease in productivity on the traditional placement because of students being in the service.	
Hybrid models	Boniface et al. (2012)	Occupational therapy United Kingdom Pyramidal learning comprising peer-assisted learning and long-arm supervision models	To investigate students' and practice educators' experiences of peer-assisted learning and long-arm supervision. Participatory action research with 2 final-year postgraduate diploma students from a UK HEI, 2 students from a Polish HEI, and 2 UK HEI staff acting as long-arm practice educators.	Preparation, clarity of roles and responsibilities, negotiating relationships and identifying and meeting individual support needs were key to success. Improved experiential learning which enhanced personal and professional growth were reported as benefits.	P2 5/10 Moderate
	Knightbridge (2014)	Occupational Therapy Australia Project placement (in pairs with long arm supervision)	To understand the experiential learning that occurred on an alternative placement and the impact on entry-level competency development, personal growth, and future practice for the student. Exploratory study using a deductive, quantitative content analysis design with 14 occupational therapy undergraduate students.	High-quality experiential learning was reported despite initial uncertainty and lack of direction. Consistent language and terminology needs to be developed when defining such placement experiences. Students may need further support to engage in deep critical reflection.	P3 4/10 Moderate
	Rindflesch et al. (2009)	Physiotherapy and occupational therapy USA	Opinion and description of a PAL model used in practice with up to 3 physiotherapy and 5 occupational therapy students being supervised by a practice educator at one time.	Model claims to be cost effective, increases placement capacity, and allows practice educators to be more productive, .promoting student professional development better than one-to-one model,	P2 3/10 Low

	Collaborative model combining dedicated practice educator and peer assisted learning		Practice educators needed time to adopt and become skilled at using the model.	
Thew et al. (2008)	Occupational therapy United Kingdom Role emerging with a project focus, combining peer-assisted and long-arm supervision models	To describe a strategy to establish and supervise the model, including a preliminary evaluation of its use. Practice Evaluation with 21 second year MSc students, penultimate placement, in 13 settings	Most students and practice educators thought the placement was a positive experience. Establishing such placements takes a lot of time and effort. Main concern was around communication and expectations of all involved in the placement. Projects must be sustainable.	P3 4/10 Moderate
Thew et al. (2018)	Occupational therapy United Kingdom Role emerging with a project focus, combining peer-assisted and long-arm supervision models	Evaluates the impact of the model reported in Thew et al. (2008) Mixed methods exploratory sequential design – 19 survey responses with 6 follow up interviews	Model increased students' sense of identity and self-belief. This approach may help prepare students for employment in expanding 'non-traditional' sectors.	P3 3/10 Low

[i]National Services Framework – Long Term Conditions Evidence Typology (Turner-Stokes et al. 2006). Research type: Opinion/experience of users and/or carers (E1), or professionals (E2). Primary research using quantitative methods (P1), qualitative methods (P2) or mixed methods (P3). Secondary research: meta-analysis (S1) or other secondary analysis (S2). Reviews: Systematic (R1), or other descriptive reviews (R2). Quality assessment rated on five parameters (scored out of 10) and categorised into 'high' (7-10/10), 'medium' (4-6/10) and 'low' (0-3/10) quality ratings.

Figure 2. Evidence map for models of practice education.